1. Develop and implement an outreach, coordination, and partnering program with local landowners and individuals, cities, counties, reclamation districts, the Delta Protection Commission, resource conservation districts, water authorities, irrigation districts, farm bureaus, other interest groups, and the general public to assure participation in planning design, implementation, and management of ERP projects.
2. Conduct project level environmental documentation and permitting as needed for each bundle of Stage 1 actions(yr 1-7).
3. Full coordination with other ongoing activities which address ecosystem restoration in the Bay-Delta system (yr 1-7); e.g., CVPIA, Four Pumps Agreement, etc.
4. Implement habitat restoration in the Delta, Suisun Bay and Marsh, and Yolo Bypass to improve ecological function, facilitate recovery of endangered species, and determine the feasibility and desirability of implementing larger scale habitat restoration in future stages (yr 1-7):
   - Restore major habitat corridors with a mosaic of habitat types along the Mokelumne and San Joaquin Rivers, within the Yolo Bypass, and along other major fish migration corridors as practicable (yr 1-7).
   - Implement tidal wetland restoration ~~pilot~~ projects to test the effectiveness of larger scale restoration at various locations in the Delta.
   - Restore large expanses of shallow water habitat in open water areas of the Delta.
5. Implement large-scale, restoration ~~pilot~~ projects on select rivers (possibly Clear Creek, Deer Creek, and the Tuolumne River) that would include implementation of all long-term restoration measures in coordination with the watershed management common program and monitoring of subsequent ecosystem responses to learn information necessary for making decisions about implementing similar restorations in Stage 2 (yr 1-7).
6. Develop an ecosystem water market (potentially $20 million per year) and acquire at least 100,000 acre-feet of water for critical ecosystem and species recovery needs (yr 1-7).

how will this interplay with "the market" for consumptive uses.

7. Complete targeted research and scientific evaluations needed to resolve the high priority issues and uncertainties (e.g., instream flow, exotic organisms, and Bay-Delta food web dynamics) to provide direction for implementing the adaptive management process and information necessary for making critical decisions in Stage 2 (yr 1-7).
8. Establish partnerships with universities for focused research (yr 1-7).
9. Complete the remaining 60% of the easements and/or acquisition for the Sacramento River meander corridor identified under the SB 1086 Program [approximately $30 million required]. Provide assurances for and participation by Sacramento River users and landowners that provides indemnification of affected parties against flooding impacts on neighboring landowners and impacts on water

*this section should not be tied to storage!

progress towards objectives; and, 4) if these objectives are not met, provide for the reopening of the setting and implementation of objectives. CALFED agencies will also support institutional arrangements that give local water suppliers an opportunity to demonstrate that cost effective efficiency measures are being implemented. The first stage implements the processes which will continue in subsequent stages.

1. Develop Measurable Objectives. Prior to the ROD, develop measurable objectives for agricultural water use efficiency. Measurable objectives are objectives for improvements in water management, which can be measured or otherwise tracked to assure that such improvements occur. Objectives will include outcome indicators based on actual water use. Objectives must result in reduced demand on Bay-Delta systems, in increased water quantity or improved timing of instream flow or other specific CALFED objectives. Objectives may vary by region. The objectives will be used to inform two sets of decisions: 1) whether and when new storage and conveyance facilities are permitted, constructed and operated; and 2) whether an individual district receives CALFED benefits. The programmatic decision is to be tied to the achievement of the goals identified in the Strategic Plan. The decision regarding access to CALFED benefits will be linked to the development and achievement of the individual plan submitted to the AWMC. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million.

2. Develop ~~Baseline~~/Reference Conditions: Establish baseline or reference conditions in order to evaluate future progress. There will be an independent review conducted in conjunction with AWMC for this purpose. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yr 1-3). (delete)

3. Expand Existing State and Federal Conservation Programs: Expand State and Federal programs (DWR, USBR, USFWS, DFG, DHS, and SWRCB) to provide technical and planning assistance to local agencies in support of local and regional conservation and recycling programs. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yr 1-7).

4. Create Public Advisory Committee: Create public advisory committee to advise State and Federal agencies on structure and implementation of assistance programs, and to coordinate Federal, State, regional and local efforts for maximum effectiveness of program expenditures. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yr 1).

5. Develop Urban Certification Process: Develop a certification process for Urban

Water Management Plans: select agency to act as certifying entity; obtain legislative authority; carry out public process to prepare regulations; implement program beginning with plans submitted in 2005. Access to CALFED benefits will be contingent upon certification of a supplier's Urban Water Management Plan. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yr 1-3).

6. Implement Urban Certification Process: Implement a process for certification of water suppliers' compliance with the terms of the urban MOU with respect to analysis and implementation of Best Management Practices for urban water conservation. Provide funding support for the entity selected to carry out this function. Access to CALFED benefits will be contingent upon certification of a supplier's compliance with the terms of the urban MOU. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yr 1-7).

7. AWMC Evaluation of Agricultural Water Management Plans: Utilize the AB3616 Agriculture Water Management Council (AWMC) to evaluate and endorse plans to implement cost-effective water management practices by agricultural districts. Identify and secure ongoing funding sources for AWMC and its members seeking to actively participate in the development, review, and implementation of these plans. Candidate activities include: administration, including staff of the AWMC itself; implementation of approved practices; and participation by individual signatories. Access to CALFED benefits for a given agricultural district will be contingent upon AWMC's endorsement of the adequacy of its water management plan and implementation. Submit to state and federal legislatures requests for funding this program at an annual rate of $___ million (yrs. 1-7).

[NOTE: Focus Group still deliberating several issues related to AWMC, including but not limited to: 1) form of action of such plans; 2) specific activities for which such funding will be sought; and 3) phasing in of certification over time.]

consisted only of federal contractors... state contractors/non-contractors not represented. It is apparent from above notation that there is not agreement among stakeholders; therefore it is presumptious to include this level of detail in document

8. Resolve Water Recycling Limitations: Resolve legal, institutional, and funding limitations for agricultural and urban water recycling. Secure loan and/or grant funding for water conservation ($200 million in Stage 1) and water recycling ($500 million in Stage 1) capital improvement projects. (yrs. 1-3).

9. On-Farm Outreach Program: Develop and implement an agricultural water use efficiency program in cooperation with the NRCS, USBR, DWR, Resource

program should total $700 million during Stage 1, with funding amount increasing throughout Stage 1 as the program is developed and implemented. Funds will be provided by state and federal agencies from appropriations and/or bond measure proceeds pursuant to a cost-share agreement to be developed before the Record of Decision. (Yr 1-7).

[NOTE: Focus group support for this provision was subject to some qualifiers. (1) Using the AWMC process to identify cost-effectiveness and to take an active role in this incentive program was viewed as appropriate by some members only if there is a process outside of the AWMC for setting overall CALFED goals for WUE common program. (2) Many members believed that financial incentives in excess of the $700 million in Stage 1 may be appropriate.]

13. Assess the Need for Additional Water Rights Legislation. Before the CALFED Record of Decision (ROD), the State Water Resources Control Board and California Attorney General's Office will, after consultation with other CALFED agencies, the Legislature, and stakeholders, evaluate the need for additional state legislation providing that a water rights holder's water rights will not be impaired solely because that water rights holder has implemented water use efficiency measures and subsequently transferred water to other beneficial uses. If this evaluation determines that such state legislation is necessary, proposed legislation will be submitted to the Legislature by the CALFED agencies. Submit to state and federal legislatures requests for funding this program at an annual rate of $ ___ million (yr 1-4).

[NOTE: Some in the Focus Group want to revisit this issue, believing that we really should move past mere evaluation.]

14. Water Measurement Program. Develop, after consultation with CALFED agencies, the Legislature, and stakeholders, state legislation that requires appropriate measurement or metering of water use for all state water users in the state of California. For municipal and industrial users, water use must be metered. For agricultural water users, water use must be measured with an accuracy equivalent to or surpassing the accuracy required of federal water contractors under the Central Valley Project Improvement Act. Submit to state and federal legislatures requests for funding this program at an annual rate of $ ___ million (yr 1-7).

Does this "groundwater measurement" include all extractions?? Even those unrelated to the Delta??

[NOTE: There is not yet agreement on this action from the members of the Ag WUE Focus Group. The primary reasons for continued disagreement are: (a) the controversial nature of water measurement in certain segments of the community; (b) the question of measuring groundwater as opposed to surface water use; (c) the appropriate level (district versus field versus something else) for ag water users; and, (d) the conflict between the AWMC MOU process that relies on "estimation" as opposed to "measurement."]

15. Linkages to Transfers: [The Focus Group is still developing language for this proposed action.] Submit to state and federal legislatures requests for funding this program at an annual rate of $ — million (yr 1-7).

16. Encourage and support research to expand potential water use efficiency measures (yr 1-7). Important not to further complicate water transfers. Hurdles?

Water Transfer Framework

The water transfer framework is designed to facilitate and streamline the water transfer process while protecting water rights and legal users of water and addressing and avoiding or mitigating third-party socio-economic impacts and local groundwater or environmental impacts. This would occur through a proposed framework of actions, policies and processes. The first stage implements the processes which will continue in subsequent stages.

1. Establish the California Water Transfers Information Clearinghouse to collect and disseminate data and information relating to water transfers and potential transfer impacts, perform research using historic data to understand water transfer impacts, and provide a forum for discussion and comment on proposed transfers (yr 1).
2. Coordinate with CALFED agencies to formulate policy, under their existing authorities, for required water transfer analysis (yr 1).
3. Begin forecast and disclosure process (DWR and USBR) of potential conveyance capacity in existing export facilities. This would be an on-going activity, occurring in conjunction with hydrologic forecasts (yr 1).
4. Develop a standardized checklist and analysis procedure (SWRCB, DWR, and USBR) to be followed by transfer proponents for proposed transfers (yr 1-2).
5. CALFED agencies work with stakeholder representatives to reduce the conflict between transfer proponents and the SWRCB, DWR, or USBR regarding what water is deemed transferrable under what conditions (yr 1-3).
6. CALFED agencies continue work with stakeholder representatives to resolve conflicts over reservoir refill and carriage water criteria (yr 1-3).

among government agencies and stakeholder groups (years 1-7).

4. Develop and implement a funding process and provide watershed stewardship funds to build the capacity of locally controlled watershed groups that ensure participation of local landowner groups (years 1-7).
5. Improve the use and usefulness of existing or future watershed clearinghouse functions to assist watershed groups with obtaining information on funding opportunities, technical assistance, and data storage and retrieval (years 1-7).
6. Ensure the completion of project level environmental documentation and permitting; assist with documentation and permitting processes as appropriate (years 1-7).
7. Evaluate the benefits (including economics) that accrue from watershed plans and projects designed to achieve CALFED goals and objectives (yr 1-7).
8. Establish, fund, and maintain watershed restoration and maintenance assistance to aide local watershed groups and private landowners in project concept, design, and implementation (years 1-7).
9. Coordinate with other CALFED and non-CALFED programs on watershed related activities (years 1-7).
10. ~~Work with stakeholders and the Legislature to develop a state-wide umbrella watershed management act (yr 1-3).~~ Watershed programs must be locally controlled and landowner-driven.

Storage

New storage will be included in the preferred program alternative as necessary to meet CALFED's goals and provided conditions and linkages for implementation are satisfied.

must have local sponsor/control

Groundwater Banking and Conjunctive Use - *This first stage includes a coordination effort with local implementing entities and landowners, and may include construction of several projects. Additional projects, if feasible, could be constructed in later stages.*

1. Develop and implement a framework for groundwater banking and conjunctive use projects (yr 1).
2. Include ~~provision to~~ protect overlying and other landowners' water rights (yr 1-7). (agreements that)
3. Provide funding assistance for groundwater plan development (yr 1-7).
4. Identify potential projects and local cooperating entities and define CALFED role (yr 1-7).
5. Conduct baseline monitoring and modeling (yr 1-7).
6. Initiate field studies (yr 2-7).
7. Project environmental documentation and permitting (yr 3-7).
8. Project design (yr 4-7).
9. ~~Conduct demonstration projects and~~ Construct two to three ~~production~~ groundwater banking facilities with target volume of 500,000 acre-feet storage (yr

1-7); e.g., potential options include Madera Ranch, Stockton East, expanded Kern Water Bank, and others.

Surface Storage - *New offstream storage and/or expansion of existing onstream reservoirs could add up to several million acre-feet of new surface storage. A description of three to five possible sites will be available at the start of Stage 1. The first stage will consist of feasibility studies, evaluations, and permitting compliance procedures. Initiation of construction will proceed as necessary to meet CALFED program goals provided conditions and linkages have been satisfied.*

see Allen Short's language

1. In conjunction with FERC relicensing and with the consent of project owners/operators, perform reoperation analysis for existing hydroelectric power reservoirs to benefit local and downstream water users, water quality, and environmental issues. With consent of project owners/operators, implement changes in operations, including funding of acquisitions, where appropriate (yr 1-7).
2. Identify initial local partners and other cooperating entities for projects and CALFED role (yr 1-3).
3. Develop environmental documentation (yr 1-5).
4. Perform feasibility studies (yr 1-5).
5. Perform field studies (yr 1-5).
6. Finalize 404(b)(1) analyses (yr 1-5).
7. Site selection (yr 4-5).
8. Evaluate improvements to potential conveyance to storage (yr 1-5).
9. If ready, obtain permits and negotiate operating agreements (yr 5-7).
10. Identify beneficiaries and negotiate cost sharing agreements (yr 5-7).
11. Begin construction ~~if conditions and linkages are satisfied~~ (yr 6-7).

→ delete: no additional hurdles needed.

Conveyance

CALFED's basic strategy is to develop a through Delta conveyance alternative based on existing Delta configuration with some modifications. Some construction of improvements in the south and north Delta should occur within the first stage to improve conditions for ecosystem and water management reliability. Part of the first stage consists of studies and evaluations of the major conveyance features. This will allow conveyance projects to be ready for permitting and construction in later stages should the projects be necessary to meet Program objectives.

South Delta Improvements - *South Delta improvements consist of methods to control flow, stage and circulation, improve fish passage, fish screen and salvage facilities, and provide SWP/CVP interties upstream and downstream of the export pumps. South Delta conveyance improvements included in Stage 1 would function with the basic conveyance*

5.32 Water Operations

No "dip" in water supplies.

~~CALFED has extended the state and federal commitments in the Bay-Delta Accord to provide operational and environmental stability through December 1999.~~

~~[***Must be updated to reflect DEFT/NoName work when complete***] Work is progressing on evaluating potential Delta water operations criteria for use during Stage 1 implementation. A major concern in the south Delta is the effect of continuing exports, specifically entrainment and salvage of important fish species. To address this concern, CALFED is evaluating the concept of flexible operations. Flexible operations would allow reducing export pumping at times critical to fish and increasing export pumping at other times. This will create risks to both water supply and the environment is consistent with the adaptive management approach.~~

~~Flexible operations will allow higher or lower export rates and export-to-inflow ratios than prescribed by the 1995 Water Quality Control Plan. Pumping could deviate from currently permitted rates seasonally and on a real-time basis in response to Delta flows and fish distributions. For example, the projects could reduce pumping when Delta inflow is low or when fish are present in large numbers and increase pumping when Delta inflow is high and few fish are present. An environmental water account might function to keep track of pumped and stored water that could become credits against pumping at critical environmental periods. The export rates could be altered for the following purposes:~~

- ~~Reduce entrainment~~
- ~~Improve foodweb productivity~~
- ~~Protect fish migrating through the Delta~~
- ~~Improve water supply reliability~~

~~Flexible operations has some potential negative effects:~~

- ~~Impacts may shift to other species or life stages~~
- ~~May locally impact water quality~~
- ~~Potential loss of water supply reliability~~
- ~~May reduce available water transfer conveyance capacity~~

~~The export rates would be managed [*** to be determined***] in the following ways:~~

~~**Seasonally based on Real-Time Monitoring Response**~~

- ~~**More restrictive at times**, providing greater environmental protection and reduced water supply~~
- ~~**Less restrictive at times**, providing additional water supply and water for~~

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to further develop the assurances package:

1. ~~**Finalize coordination among agencies or agreement**~~**Complete a decision on ~~new entity for implementation of the ERP (yr 1-3)~~an overall CALFED management structure**. This decision will reflect the manner in which the overall CALFED program is managed and coordinated. It will also assign responsibilities for each of the program's elements to a new entity, existing entity, or combination of entities. Legislative recommendations will be made, if necessary.
2. ~~**Refine conservation strategy (yr 1-3); e.g., and develop mechanisms to allow incidental take, where necessary, for those actions identified in the ROD to be completed during Stage 1**~~**Complete a decision on an ERP entity**. Over the past two years, stakeholders have done considerable work on the need for a separate entity to carry out the ERP. A high degree of consensus among stakeholders has been reached on the need for a new organization to carry out the many new ERP tasks. The nature and specifics of an ERP entity will be decided, and legislative recommendations made if necessary.
3. ~~**Recommend legislation, if necessary, to implement new institutional arrangements or facilitate program implementation (yr 2-3)**~~**Complete the Conservation Strategy**. The Strategy will be mitigations and actions for species recovery, and will provide the framework for incidental take associated with Stage I actions. (See Page ___)
4. ~~**Incorporate**~~**Complete** ~~**the final State Board's water rights decision for allocation of responsibility to meet flow requirements for**~~**Agricultural Water ~~Quality Control~~Use Efficiency Strategic Plan** ~~95-IWR6 (May 1995) in water transfer and operational rules (yrs 1-2).~~ (See Page ___)
5. ~~**Implement**~~**Develop an ~~environmental documentation and permit coordination process (yr 1-7)~~operational plan for water allocation**. The plan will move beyond the State Board's water rights decision for allocation of responsibility to meet flow requirements for Water Quality Control Plan 95-IWR, and will be consistent with all regulatory requirements.
6. delete. Replace with "be consistent with"

~~**Assurances in Stage 1 are in many cases provided in**~~**Identify the ~~way that actions have been selected and proposed for implementation~~first group of Stage I projects, and ~~by linkage and integration with other Stage 1 actions~~implement an environmental documentation and permit coordination process**. Certain Stage I projects have little controversy associated with them, and could move forward quickly. To enable these projects to move forward with a minimum of delay, a process to streamline or consolidate permitting and CEQA/NEPA requirements will be implemented.

7. **Complete a Programmatic Section 404 Assurance**. This programmatic document will present a clearly-defined 404 process with appropriate decision criteria. (See Page ___)

- **Planning versus Implementation** - CALFED was created specifically to createStage II decisions on water quality and conveyance, using expert advice, to determine the need for an isolated conveyance; these decisions may be necessary to achieve the Program's objective of continuous improvement in water quality and to maintain a long-term plan. However, plan implementation poses significant new challenges that the current arrangement was not designed to deal withtrajectory towards recovery for endangered species.

- Stage I decisions on adaptive management for ecosystem restoration. The entire ERP is structured on the premise of adaptive management, a particular approach for future decisionmaking. For example, is a specified plan or treatment working, or will additional measures need to be taken?

- Maintaining proper balance among all of the water management tools to achieve the Program's water supply reliability objectives and comply with Clean Water Act Section 404 for storage.

Without effective decisionmaking on these and numerous other difficult CALFED issues, the program cannot succeed. Whether by a new governmental entity, or some mix of the existing CALFED structural components, these decisions will have to made. Typically this type of high-level decisionmaking is done at the highest departmental, or perhaps cabinet level. It is often based on the best scientific information from advisory or other formal scientific bodies.

Decision-making authority should be based on existing authority (transferred from other entities?) not new, additional

When implementation of the CALFED program occurs, there are a number of inescapable duties that will be required under the program besides decisionmaking. Listed below are a number of such duties, and the examples of organization types that can carry them out.

1. **Coordinate Program Actions** - Within the CALFED programs, many actions must coordinate with other aspects of the program. Examples would include ecosystem restoration coordinating with setback levees in the Levee Program, or Watershed Program actions affecting Water Quality. Projects may take several years to complete, and may involve a number of different agencies. Models for this type of duty are typically executive levels at state or federal agencies.

2. **Budget Management** - This category of activities includes allocating resources to program activities, prioritizing when activities are funded, and tracking expended funds. These activities are usually carried out at the policy level by department-level executives, and at the implementation level by specialized administrative staffs within agencies. Policy level decisions could be carried out by a board or similar group, with some loss of efficiency.

3. **Assignment of responsibilities and corrective actions** - For any type of

throughout California, the introduction of exotic species, water pollution, and numerous other factors have had a serious impact on the fish and wildlife resources in the Bay-Delta estuary. This impact, as well as other effects of the continued resource conflicts in the Bay-Delta system, are is discussed in detail in Chapter 2.

Although all agree on the importance of the Bay-Delta estuary for both fish and wildlife habitat and as a reliable source of water, few agree on how to manage and protect this valuable resource. In the past two decades, these disagreements have increasingly taken the form of protracted litigation and legislative battles; as a result, progress on virtually all water-related issues has become mired down, approaching gridlock.

The CALFED Bay-Delta Program was established to reduce conflicts in the system by solving problems in ecosystem quality, water quality, water supply reliability, and levee and channel integrity. The Program seeks to do this by developing a long-term comprehensive plan that will restore ecological health and improve water supply and water supply reliability for beneficial uses of the Bay-Delta system. The Program has crafted alternatives that improve water quality so as to protect Delta drinking water supplies and improve the quality of aquatic habitat. Maintaining and improving the integrity of Delta levees and channels will protect agricultural, urban, and environmental uses within the Delta and protect the quality of water used elsewhere in the state. Water conservation and recycling programs can assure the efficient use of existing water supplies and any new supplies developed through the Program. **The CALFED mission, objectives, and solution principles shown in the box on page 6 guide how the Program will be implemented.** ~~**to ensure that all aspects of the system are improved, together.**~~ Carrying out the mission, achieving the objectives, and adhering to the solution principles will ensure that CALFED fulfills its commitment to continuous improvement in all of the four problem areas.

concurrent

Given the history of conflict in the Bay-Delta system, CALFED recognizes that any proposed program to address this broad spectrum of resources will be controversial. Stakeholders participating in the CALFED process have already identified significant concerns about virtually every component in the Program. CALFED encourages all members of the public to review the material in this report and to provide comments for further consideration.

A new public comment period on the Revised Draft Programmatic EIS/EIR will begin in early 1999, including public hearings throughout the state. The Final Programmatic EIS/EIR is scheduled for late 1999.

Some Delta Statistics

Area of the Watershed: The system drains more than 61,000 square miles, or 37% of the state.
Area of the Delta: The legal Delta includes 738,000 acres.
Delta Inflow*: Historic inflow ranges from 6 to 69 million acre feet (MAF) per year; average is 24 MAF.
Diversions: Over 7,000 diverters draw water from the system, including 1,800 in the Delta itself.
Delta Exports*: The SWP and CVP draw an average of 5.9 MAF (approximately 3.6 MAF for agriculture and 2.3 MAF for urban uses) from the Delta each year.
In-Delta Water Use: Net in-Delta water use averages approximately 1 MAF annually.
Flora: Over 400 plant species can be found in the Delta, not including agricultural crops.
Fauna: The Delta harbors about 225 birds, 52 mammals, and 22 reptile and amphibian species.
Fish: There are 54 fish species in the Delta, and a total of 130 in the Delta and Bay.
Marshes: There are 8,000 acres of tidal marsh in the Delta; originally, there were 345,000 acres.
Levees and Channels: Over 700 miles of waterways are protected by 1100 miles of levees.
Subsidence: Some Delta lands are more than 20 feet below sea level.
Delta Farmland: Over 520,000 acres are farmed in the Delta.
Principal Crops: The most commonly grown Delta crops are wheat, alfalfa, corn, and tomatoes.
Agricultural Value: Average annual gross value of Delta production is $500 million.
Recreation: Recreational use of the Delta is about 12 million user days per year

* Simulated flow based on historical hydrology, but with existing storage and conveyance facilities in place and operating to meet 1995 levels of demand.

Yolo Bird comment (delete)

2. BACKGROUND

2.1 Bay-Delta Problems/Objectives

There is a rich history of conflict over resource management in the Bay-Delta system. For decades the region has been the focus of competing interests--economic and ecological, urban and agricultural. These conflicting demands have resulted in several resource threats to the Bay-Delta: the decline of wildlife habitat; the threat of extinction of several native plant and animal species; the collapse of one of the richest commercial fisheries in the nation; the degradation of ~~the~~ Delta water quality; the continued land subsidence on Delta islands; and a Delta levee system faced with a high risk of failure.

At the simplest level, problems occur when there is conflict over the use of resources from the Bay-Delta system. As population increases, California asks more of the system, and there is more conflict. Single-purpose efforts to solve problems often fail to address the conflict. To the extent that these efforts acquire or protect resources for one interest, they may cause impacts on other resources and increase the level of conflict. Major conflicts are summarized below.

- *Fisheries and Water Diversions.* The conflict between fisheries and water diversions results primarily from fish mortality attributable to water diversions. This includes direct loss at pumps, reduced survival when young fish are drawn out of river channels into the Delta, reduced spawning success of adults when migratory cues are altered, and reduced survival associated with inadequate stream flows and reduced Delta outflows. The need to protect species of concern has prompted restrictions on pumping and other regulations ~~that allow sufficient fishery flows to remain in the natural system~~, which restricts the quantity and timing of diversions.

- *Habitat and Land Use.* Habitat to support various life stages of aquatic and terrestrial plants and animals in the Bay-Delta has been lost because of conversion of that habitat to agricultural and urban uses. In addition, some habitat has been lost or adversely altered due to construction of flood control facilities and levees needed to protect developed land. Efforts to restore the habitat can also create conflict with existing uses, such as agriculture and levee maintenance.

- *Water Supply Availability and Beneficial Uses.* As water use and competition for water have increased during the past several decades, so has conflict among users. A major part of this conflict is between the volume of instream water needs and out-of-stream water needs, and the timing of those needs within the hydrologic cycle.

→ must address/recognize effects of non-native aquatic species...

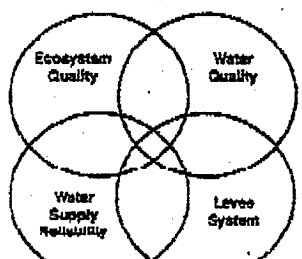
interrelated as well; many past attempts to improve a single problem area have achieved limited success because solutions were too narrowly focused.

Second, there is great variation in the flow of water through the system and in the demand for that water at any time scale ~~we might examine~~that might be examined (from year to year, between seasons, even on a daily basis within a single season). The value of water for all uses tends to vary according to its scarcity and timing. ~~CALFED can take advantage of this variability to reduce conflict and solve problems in several resource areas.~~ This leads to the need for an overall **water management strategy**.

Finally, the solutions must be guided by **adaptive management**. The Bay-Delta ecosystem is exceedingly complex, and it is subject to constant change as a result of factors as diverse as global warming and the introduction of exotic species. CALFED will need to adapt management of the system as we learn from our actions and as conditions change.

→ speculative / largely unproven (delete)

Interrelationships



In the past, most efforts to improve water supply reliability or water quality, improve ecosystem health, or maintain and improve Delta levees were single-purpose projects. A single purpose can keep the scope of a project manageable but may ultimately make the project more difficult to implement. The difficulty occurs because a project with narrow scope may help to solve a single problem but have impacts on other resources, causing other problems. This in turn leads to conflict. Ultimately no problem is solved, or one problem is solved while others are created.

The CALFED Program takes a different approach, recognizing that many of the problems in the Bay-Delta system are interrelated. Problems in any one problem area cannot be solved effectively without addressing problems in all four areas at once. This greatly increases the scope of our efforts but will ultimately enable us to make progress and move forward to a lasting solution.

Significantly, there are many linkages among the objectives in the four problem areas and among the actions that might be taken to achieve these objectives. Solving problems in four areas at once does not require a four-fold increase in the cost or

Eight Program Elements Working Together to Solve the Four Problem Areas

- Long-Term Levee Protection Plan
- Water Quality Program
- Ecosystem Restoration Program
- Water Use Efficiency Program
- Water Transfer Program
- Watershed Program
- Storage
- Conveyance

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number of actions. Most actions that are taken to meet program objectives, if carefully developed and implemented, will make simultaneous improvements in two, three, or even four problem areas.

What kinds of actions can be taken to solve problems in the Bay-Delta system? The actions can be grouped into categories of levee system improvements, water quality improvements, ecosystem restoration, water use efficiency, water transfers, watershed management, water storage, and Delta conveyance modifications. Specific actions range from physical restoration of habitat in the Delta to water conservation measures. Programmatic descriptions of the eight program elements are presented in Chapter 4 of this document. More detailed descriptions for the first stage implementation are presented in Chapter 5. Complete descriptions of Program elements are contained in various *Program Plans*.

While CALFED will generally not rely on new regulations to implement Program objectives, it does recognize that existing regulatory programs will continue to be implemented by CALFED agencies. CALFED represents a unique opportunity to provide high-level coordination of these regulatory programs so that regulatory implementation works in furtherance of CALFED Program goals. The CALFED Bay-Delta Program specifically defines incentives and voluntary partnerships to implement many individual actions in the Program. Incentives allow stakeholders to participate in CALFED actions which may not have been economical to them without the incentives. Partnerships allow stakeholders and CALFED agencies to leverage their individual resources by teaming on certain actions.

Some regulations, like those contained in ESA and Section 404 of the Clean Water Act, are ones that CALFED must satisfy as the Program is implemented. Many other regulatory actions can be made more effective and constructive as a result of CALFED actions. For example, water quality regulatory agencies are obligated to develop total maximum daily loads (TMDLs) for certain water quality constituents in the Bay-Delta system. CALFED efforts in monitoring and research will provide valuable information which will assist regulatory agencies in developing these TMDLs. CALFED incentive based source control actions will help reduce the load of these and other pollutants. In this way, many ongoing regulatory requirements will be easier to satisfy in the context of the CALFED Bay-Delta Program.

add: language re: integration of multiple programs with similar goals (i.e. CVPIA); resolve ecosystem concerns comprehensively not curricularly.

Flexibility - Water management tools also differ as to their flexibility. For example, many water conservation measures have substantial benefits in reducing overall demand, but, once implemented, don't provide flexibility to react to changes in hydrological circumstances. Similarly, surface storage facilities are very effective at providing a rapid reaction in either releasing or collecting large amounts of flow. Although groundwater storage may hold more volume, it would have to be operated in conjunction with surface storage to attain the same level of flexibility.

Environmental Impacts - Finally, water management tools differ as to their potential negative effects on environmental resources. Generally, water conservation measures are viewed as more environmentally benign, given that they may reduce the overall demand for water diverted out of the environment. Nevertheless, even here, there may be adverse environmental effects. For example, substantially increasing farm or landscape irrigation efficiency may reduce water runoff that currently sustains aquatic or aquatic-dependent ecosystems.

Water storage facilities also differ in their potential negative effects on environmental resources. Many believe that groundwater storage facilities impose fewer negative impacts than surface storage, and that off-stream storage imposes fewer impacts than on-stream storage. Further, additional storage of any kind, by its very nature, raises the possibility of increased net overall diversions from the system, and it remains a subject of scientific debate whether, how, and to what extent, additional diversions can be made out of the Bay Delta system without imposing additional stress on environmental resources.

In evaluating any particular set of water management tools, CALFED will consider the relative value of the tools as to these three fundamental factors of cost, flexibility, and environmental impacts.

add statement recognizing benefits (or environmental implications) of groundwater recharge thru surface irrigation.

Alternative in Chapter 4. The first steps CALFED proposes are detailed in the list of Stage 1 actions in Chapter 5. As to particular water management tools, Stage 1 will do the following:

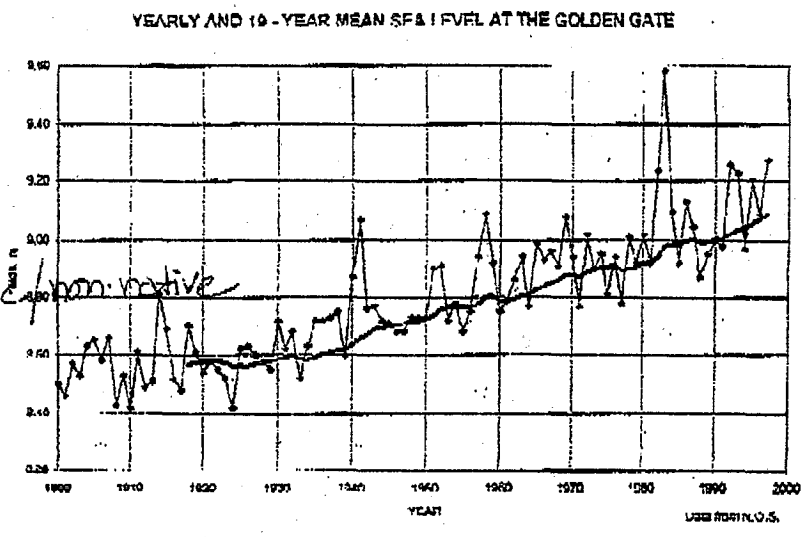
- A high level of water use efficiency (both conservation and recycling) must be achieved.
- Substantial progress in refining the water transfers institutional framework must be demonstrated.
- Storage, both groundwater and surface storage, must be thoroughly investigated and implemented, where appropriate.
- Watershed management studies and projects must be implemented to improve the timing, volume and quality of water resources.
- Water quality source control and other management measures must be implemented to address salinity in the system.
- Monitoring and diversion management improvements must be evaluated and implemented on an ongoing basis.

must take groundwater recharge thru surface irrigation into account

Adaptive Management

A third fundamental concept of the Program is adaptive management.

No long-term plan for management of a system as complex as the Bay-Delta can predict exactly how the system will respond to Program efforts or foresee events such as earthquakes, climate change, or the introduction of ~~new~~ exotic/non-native species to the system. For example, how will the CALFED levee program be adapted in the future if sea levels continue to rise?



The fundamental concept of adaptive management is that management prescriptions will be assessed and refined (adapted) according to new information in order to meet program goals and objectives. Adaptive management is an iterative process that involves: 1) identifying clear goals and objectives for the program elements; 2) using models to identify our understanding of the Bay-Delta system and to assess and prioritize a range of potential actions to improve the system; 3) implementation of actions and research most likely to achieve goals and objectives and to improve our knowledge of the system; ~~and~~ 4) monitoring and assessment of actions to gain information to refine the models and alter future actions in order to meet program goals and objectives; ~~and~~ 5) changing management activities based upon new information. (6) must be consistent with the bundling package(s) of each stage. Adaptive management, as an essential Program concept, acknowledges the need to constantly monitor the system and adapt the actions to restore ecological health and improve water management. These adaptations will be necessary as conditions change and as CALFED learns more about the system and how it responds. The Program's objectives will remain fixed over time, but actions can and should be adjusted to assure that the solution is durable.

The concept of adaptive management is an essential part of every CALFED Program element, as well. In every part of the Program, new or more intensive actions are proposed. Along with these proposed actions comes uncertainty. What actions work best to achieve program objectives? How can these actions be modified to work better, cost less, or be simpler to implement? How should the emphasis among actions change over time? Are there new or

costs. Initial costs will include study, design, permitting, construction, mitigation, acquisition, and other first costs of the Program. Annual costs will include operation and maintenance, monitoring, reoccurring annual purchases, and other annual costs.

- **Assurances Difficulty** - is an estimate on how difficult it will be to formulate an assurance package and get consensus among agencies and stakeholders. It is not an assessment on the perceived effectiveness of the assurance package.

- **Habitat Impacts** - is an assessment of the adverse habitat impacts due to implementation of the storage and conveyance facilities.

- **Land Use Changes** - is primarily a measure of the amount of agricultural land that would change to other uses by implementation of the Program.

- **Socio-Economic Impacts** - include adverse and beneficial impacts on commercial and recreational fishing, farm workers, power production, and others indirectly affected by Program actions.

- **Consistency with Solution Principles** - provides a qualitative measure of how well the alternatives meet the Program solution principles. Alternatives which violate the solution principles are not likely to be practicable or implementable. The solution principles provide insight in considering tradeoffs among the other distinguishing characteristics in a balanced manner.

- **Ability to Phase (Stage) Facilities** - provides an indication on how easy it will be to stage implementation of storage and conveyance facilities over time.

- **Brackish Water Habitat** - In the Bay-Delta system there is a salinity gradient between fresh and salt water. The western Delta is an area of important aquatic habitat with salinity levels of approximately 2 parts per thousand. The location of this salt concentration, known as X2, is an indicator of effects on this critical brackish water habitat among the alternatives.

The March 1998 *Phase II Interim Report* provided a summary of preliminary analyses with these eighteen distinguishing characteristics. In these analyses, two key distinguishing characteristics seemed to be were particularly important in identifying how well the alternatives perform. **Export Water Quality** and **Diversion Effects on Fisheries,** are highly dependent on the alternative selected. Therefore, irrespective of whether these two characteristics are the most important to selection of the preferred program alternative, they are the characteristics most dependent on that decision.

Aspects of the current problem include:

- Predation in Clifton Court Forebay; entrainment of fish, eggs, and larvae at the SWP and CVP export pumps (partly due to inadequate fish screen facilities)
- Mortality associated with the need to capture, sort and transport fish to Delta channels away from the screens
- Adverse flow patterns induced by the transport of Sacramento River water across the Delta for diversion, which affects the migration and spawning of fish species.
- Reductions in habitat quality and availability induced by changes in flow conditions in the system caused by project operations and the north-to-south transport of water across the Delta to the export facilities

There is a fair degree of agreement on the relative magnitude of fish losses due to diversion effects that would occur under the various alternatives. However, there is much less agreement on the role of diversion mortality in controlling population abundance when compared to other stressors such as habitat loss.

why include? non-native.

The focus for diversion effects on fisheries is on particular estuarine and migratory fish: chinook salmon, delta smelt, splittail, striped bass, steelhead and white catfish. Observations over the last half century indicate that these species are quite vulnerable to having their behavior disrupted by the transport of water from the Sacramento River to the export pumps in the south Delta. ~~For other fish species, diversion effects do not appear to be a major stressor.~~ Other Delta resident fish such as tule perch and several members of the sunfish family ~~appear relatively invulnerable to being drawn to the export pumps~~ were not specifically evaluated but would benefit from improvements made for the above estuarine and migratory fish. Fish such as starry flounder and longfin smelt, and other organisms such as bay shrimp, live primarily downstream of the Delta. Although they are potentially affected by changes in the amount of water flowing from the Delta through San Francisco Bay to the ocean, they appear to have little vulnerability to diversion effects of the export pumps.

add

CALFED has formed interagency/stakeholder groups to address the technical issues related to diversion effects on fisheries. The Diversion Effects on Fish Team (DEFT) was formed in February 1998 to evaluate the technical issues related to diversion impacts on fisheries. In its review, the DEFT considered both the direct effects of entrainment and the related effects of Delta flow circulation. CALFED first asked the DEFT to evaluate the likelihood of fisheries recovery under the three existing alternatives. The DEFT reported that, while the dual conveyance alternative would result in the greatest benefit to fisheries, they were not confident that any of the alternatives as described would necessarily recover all affected fish species. CALFED then asked DEFT to develop modified alternatives that would recover these species. Given the concerns about the implementability of the dual Delta conveyance, the DEFT was instructed to begin this effort by developing a modified through-Delta conveyance alternative that, if implemented, would result in the recovery of these fish species. DEFT's activities since

+further discussion on effect of non-natives on priority species is warranted

include: incentives for water users to conserve (vs. mandates)

problems facing the Bay-Delta including a degraded Bay-Delta ecosystem, declining water quality, a levee system vulnerable to failure, or the uncertainty of water supplies to meet beneficial uses.

Water conservation, along with water recycling, is at the core of the Water Use Efficiency Program element. In the past two decades, many agricultural and urban water users have made significant improvements in their water use efficiency, and the Program intends to amplify these gains by further expanding the implementation of water use efficiency measures. To stimulate the implementation of these efficiency measures, the Program ~~has proposed that~~will work with local, state, and federal government agencies provide both financial and technical assistance to water providers and water users. The Program has also recommended reporting mechanisms/processes to track the implementation of water use efficiency measures and to ensure compliance with water use efficiency targets/objectives.

Response to New Facility Issues

~~CALFED's basic strategy for Delta conveyance is to use the existing Delta configuration and channel modifications. Modifications to this through Delta conveyance strategy will only be made after thorough assessment of a variety of factors. For example, a decision to construct an isolated facility will be warranted if, after aggressive implementation of relevant common program elements and improvements to through Delta conveyance, there is still an inability to achieve CALFED goals. Reasons for considering an isolated facility would include a public health necessity for improved drinking water at the source arising from technical or economic infeasibility of meeting standards for safe drinking water through other methods, and/or an inability to achieve fishery recovery with continuing impacts of diversions from the south Delta.~~

CALFED's strategy is to develop a through-Delta alternative based on the existing Delta configuration with some modifications, evaluate its effectiveness, and add additional conveyance actions if necessary to achieve CALFED goals and objectives. The initial through-Delta conveyance will be continually monitored, analyzed, and improved to maximize the potential of the through-Delta approach meeting CALFED goals and objectives, consistent with its Solution Principles. If the through-Delta conveyance still fails to meet the CALFED goals and objectives, there will be a reassessment of the reasons and the need for additional Delta conveyance and water management actions.

If CALFED's goals and objectives cannot be accomplished by the through Delta conveyance strategy, the preferred program alternative includes additional actions that may be taken toward these goals and objectives after thorough assessment of a variety of factors. For example, a decision to construct an isolated facility may occur if, in combination with vigorous implementation of relevant common program elements and improvements to through Delta conveyance, and consideration of other water management options, an isolated conveyance facility is still deemed necessary. Such a facility would have to be demonstrated to be the most

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cost effective and least environmentally damaging alternative, and to be necessary for significantly advancing CALFED's commitment to seek continuous water quality improvement.

An isolated conveyance facility also may be necessary if there is inability to achieve fishery recovery due to continuing impacts of diversions from the south Delta. A combination of these two factors also could result in construction of an isolated facility and/or other additional water management actions to meet CALFED goals and objectives after assessment of the effectiveness of the initial through Delta conveyance actions, and after a determination that such a facility would be effective in resolving these problems. These factors will be continually reevaluated during Stage 1 as part of the adaptive management process, and will form the basis for a comprehensive set of additional improvements in Stage 2.

Considering the magnitude of conflicts over available water in California, CALFED believes that it must aggressively evaluate and implement all available water management options to ensure water supply reliability. Therefore, aggressive implementation of water conservation, recycling, and a protective water transfer market are critically important for effective water management. New surface and groundwater storage will be constructed as necessary, considering appropriate implementation of nonstructural programs and demonstrated willingness to pay by potential beneficiaries, to meet CALFED's Program goals and objectives. During Stage 1, CALFED will evaluate and determine the appropriate mix of these water management tools.

Response to Agricultural Issues

The CALFED Program could result in the conversion of agricultural land for Program purposes such as ecosystem restoration, improved water supply reliability, and improved levee stability as the Program is implemented over the next 25 to 30 years. The Program intends to minimize the conversion of farmland, including prime and unique farmland, to the extent possible. In addition to its overall approach of acquiring land in voluntary transactions with willing sellers, CALFED is proposing to adopt several implementation policies that will minimize the adverse impacts to agricultural land and water resources. They include:

- Maintaining land in private ownership to the greatest extent practicable
- Prioritizing use of existing government owned lands for habitat restoration
- Working with local landowners and organizations to develop projects that meet CALFED objectives while also benefitting local landowners.

add: • Coordinating w/other programs (i.e. CVPIA) with similar goals.

Agricultural water users throughout the state will benefit from various program elements. The objective of the Water Quality Program is to improve water quality for all beneficial uses of the Bay-Delta. The Long-Term Levee Protection Plan will bolster and maintain the Delta levees that protect important agricultural resources, infrastructure, habitat and water quality. The Water Use Efficiency Program will provide planning, technical, and financial assistance to agricultural water users to implement water use efficiency measures, which will help reduce agricultural

water costs. The Water Transfers Program will facilitate water transfers; agricultural water users can generate transferable water by implementing water use efficiency measures and can acquire water in the transfer market to improve their water supply reliability. New storage facilities could benefit agricultural water users by providing increased flood protection, increased water supply, and groundwater recharge. By recovering healthy populations of endangered or threatened species, the Ecosystem Restoration Program will help improve water supply reliability.

Response to Area of Origin/Water Rights Issues

The CALFED Bay-Delta Program will be consistent with water ~~is not proposing to change water~~ rights law in California. Altering the state's system of water rights is beyond the mandate of the CALFED Bay-Delta Program, and the Program will operate within the system of existing water rights including existing laws and regulations protecting areas of origin. Although the State Water Resources Control Board is one of the CALFED agencies working to develop a long-term Bay-Delta solution, the Board retains its independent regulatory authority over water rights and water quality protection in California. The Board is engaged in water right hearings concerning the allocation of responsibilities to water right holders for meeting Bay-Delta water quality standards.

The CALFED Bay-Delta Program is designed to address a wide variety of problems and concerns affecting the Bay-Delta system. While it focuses on the Delta region, it has the potential for affecting land use throughout the vast solution area. CALFED seeks to accomplish its objectives in partnership with landowners, stakeholders, and communities throughout the solution area, being especially mindful of the potential impacts on private property owners and existing landowner rights.

Response to Finance/Beneficiary Pays Issues

CALFED will use a benefits-based approach to allocate the costs of the program. Simply put, those who benefit from the program will pay for their fair share of it. This means that a combination of both public and user funds will be needed. Many of the proposed program actions serve multiple benefits, including public benefits. These could include protection of key Delta functions including agriculture and levee system integrity, conveyance and ecosystem restoration.

CALFED has developed a cost draft financing plan, which is included with this report. It includes financial strategies which could be implemented in Phase III. A complete financial strategy for Stage 1 will be available at the time of the Record of Decision.

~~[***Moved 3.5 to 4.1***]~~

4. DRAFT PREFERRED PROGRAM ALTERNATIVE

The description of the alternative is programmatic in nature, intended to help agencies and the public make decisions on the broad methods to meet Program purposes. The alternative is not intended to define the site specific actions that will ultimately be implemented. See Chapter 5 Implementation Plan for more specific Stage 1 actions.

The preferred program alternative for the CALFED solution is assembled from hundreds of programmatic actions. To help organize/simplify the discussion of the alternative, the actions are grouped under each of the eight program elements summarized below. These will be implemented in stages utilizing adaptive management over the next 30 years:

- **Long-Term Levee Protection Plan** - Provides significant improvements in the reliability of the Delta levees to benefit all users of Delta water and land.
- **Water Quality Program** - Makes significant reductions in point and non-point pollution for the benefit of all water uses and the Bay-Delta ecosystem.
- **Ecosystem Restoration Program** - Provides significant improvements in habitat, restoration of ~~some~~ critical flows, and reduces conflict with other Bay-Delta system resources.
- **Water Use Efficiency Program** - Provides support and incentives at the local level through expanded planning, technical, and financial assistance for efficient use of water for agricultural, urban, and environmental purposes.
- **Water Transfer Program** - ~~Provides a~~ framework of actions, policies and processes to facilitate, encourage, and streamline an active yet protective water market which will allow water to move between users, including environmental uses, on a voluntary and compensated basis.
- **Watershed Program** - Promotes locally-led watershed management activities and protections relevant to achieving the CALFED purpose through financial and technical assistance.
- **Storage** - Recognizes [redacted] water supply and environmental benefits of new or expanded groundwater and surface storage. New storage will be included in the preferred program alternative as necessary to meet CALFED's goals, considering appropriate implementation of nonstructural programs and demonstrated willingness to pay by potential beneficiaries. During Stage 1,

- Provide stability in the water resources management framework ~~until actions in subsequent stages substantively reduce conflicts in the system~~and reduce conflicts in the system.
- Improve conditions in the Bay-Delta system for listed and proposed species. These actions can provide for species protection and begin the process of recovery.
- Have a mix of public and private funds based on "beneficiary pays" principle.
- Build the information base for the transition to Stage 2.
- Address the conditions and linkages (assurances) necessary before proceeding with storage and conveyance.
- Include an ongoing ~~public~~stakeholder process ~~or information dissemination~~to provide ~~and~~ input to the decision making and adaptive management process.
- ~~Include, wherever possible, measurable performance goals or indicators of success for all Program goals areas.~~
- Complete implementation ~~plan~~agreement to finish Stage 1 and to move to subsequent stages for each program element:
  - Refine implementation ~~plan~~agreement for the long-term levee protection plan
  - Refine implementation ~~plan~~agreement for the water quality program
  - Refine implementation ~~plan~~agreement for the ecosystem restoration program
  - Refine implementation ~~plan~~agreement for the water use efficiency program, water transfer program, and storage as a bundle to meet CALFED water supply reliability goals.
  - Refine implementation ~~plan~~agreement for watershed program
  - Refine implementation ~~plan~~agreement for conveyance

Why handle these 3... doesn't other programs??

CALFED will continue work ~~between the Revised Draft EIS/EIR and the~~until release of the Final EIS/EIR in late 1999 on grouping the Stage 1 actions into a series of bundles (packages) which can provide additional assurances for balancing benefits. For example, a bundle of actions in the Delta could include levee work, habitat improvements, water quality work, and facilities and operations to improve water supply reliability. Bundles for some actions may be geographical, based on timing, oriented around permitting needs like Clean Water Act Section 404, or other grouping. Linking the actions would assure that they all move forward together. These may be linked within the same site specific EIS/EIR, tied by contractual documents, dependent on the same funding, or other means.

Discussion is continuing on conditions and linkages for a draft preferred program alternative. There are many potential linkages (many are assurance issues) among the various actions in the draft preferred alternative, which includes common program elements, storage, and conveyance. Future conditional decisions can be made depending on how the conditions and linkages are

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satisfied. (If there is "generally broad" agreement on these program elements, then it also exists for some storage.)

There is ~~generally broad~~ agreement on proceeding with the program elements for water quality, water use efficiency, ecosystem restoration, levee system integrity, water transfer framework and the watershed program, but only if implementation is linked to reasonable progress in all program elements. However, there is not agreement on the need for surface storage and dual Delta conveyance (with isolated facility) to achieve the CALFED purpose.

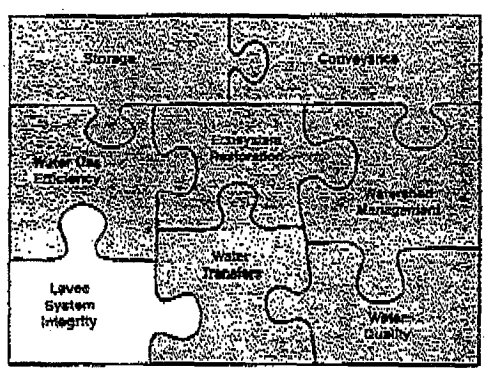
Meeting the CALFED mission statement and goals is dependent on improvement in all problem areas (ecosystem, water quality, levee system integrity, and water supply reliability). Linkages between improvement in the problem areas are key to consistent and continuous progress towards meeting the CALFED purposes. The eight program elements and linkages between the elements are the mechanisms to achieve improvement in the four problem areas.

~~4.12~~ Program Elements

Meeting the CALFED purpose is dependent on improvement in all four problem areas (ecosystem, water quality, levee system integrity, and water supply reliability). The eight program elements and linkages between the elements are the mechanisms to achieve improvement in the problem areas.

Long-Term Levee Protection Plan

The Sacramento-San Joaquin Delta is an area of great regional and national importance, which provides a broad array of benefits including agriculture, water supply, transportation, navigation, recreation and fish and wildlife habitat. Delta levees are the most visible man-made features of this system. ~~Historically, the levee system has been viewed as a means of protecting other resources. However,~~ Levees are an integral part of the Delta landscape and are key to preserving the Delta's physical characteristics and processes including definition of the Delta waterways and islands.



Given the numerous public benefits protected by Delta levees, the focus of the Long-Term Levee Protection Plan is to improve levee stability. The levee plan will build on the successes of existing programs in achieving its goals. There are five main parts to the levee ~~protection~~ plan:

- **Base-Level Protection Plan** - Base-level funding provides equitably distributed funding to participating local agencies in the Delta. One of the primary goals of the CALFED Program is to reconstruct all Delta levees to a particular standard. CALFED has tentatively selected the U.S. Army Corps of Engineers PL 84-99 standard. Base level funding will provide for reconstruction of Delta levees to the PL84-99 standard and fro actions required by local agencies to maintain levees at the PL84-99 standard. Required levee work may include removal of vegetation and debris, maintenance of water control devices, repair or replacement of existing bank protection, addition of material to achieve required cross section, removal of flood deposits, extermination of burrowing rodents, repairing and shaping access roads, repairing slipouts and erosion damage, dredging as required for minor repairs, controlling vegetation on the waterside of the levee, and other actions necessary to maintain levee integrity and appurtenances. This component will seek continuity with and build on the successes of the Delta Levee Subventions Program which is currently administered by DWR.

limiting recreational activity (i.e. boat traffic)

- **Special Improvement Projects** - The special improvement project funding continues a funding mechanism for special habitat improvement and levee stabilization projects to augment the base-level funding ~~at the discretion of the program manager~~, within specific policy guidelines. Under the special improvement projects, flood protection would be enhanced for key islands that provide statewide benefits to the ecosystem, water supply, water quality, economy, and the infrastructure. Special improvement project funding is based on the benefit to the public, not solely on the need for improvement. This component will seek continuity with and build on the successes of the Special Flood Control Protections Program which is currently administered by DWR.

- **Delta Island Subsidence Control Plan** - Subsidence has played a key role in bringing the Delta islands to where they are today: relatively tall levees protecting interiors below sea-level. ~~The Levee Program will promote land management and levee maintenance practices to reduce subsidence that affects the levee system.~~ The Levee Program will implement current BMPs to correct subsidence on levees and coordinate research to quantify the effects and extent of inner-island subsidence as it relates to all CALFED objectives. Subsidence control measures will be implemented through the ~~Special Projects~~base-level protection component of the Levee Program and supplemented by research to develop BMPs through grants through the existing special project program.

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- **Organochlorine ~~pesticides~~Pesticides** - Reduce the load of organochlorine pesticides in the system, including residual DDT and ~~Chlordane~~chlordane, by reducing runoff and erosion from ~~agricultural~~ lands through Best Management Practices. Sediment control will also protect valuable topsoil and prevent costly maintenance of drainage systems. (delete)

- **Trace Metals** - Reduce impacts of trace metals such as copper, cadmium, and zinc in upper watershed areas, near abandoned mine sites. Reduce impacts of copper through urban stormwater programs and agricultural Best Management Practices. Study the ecological impacts of copper in the Delta. Determine the feasibility of copper reduction.

- **Mercury** - Reduce mercury in rivers and the estuary by source control at inactive and abandoned mine sites. ~~Also, study bioavailable~~Determine current mercury levels in ~~the rivers~~water, sediment and fish in the estuary, rivers and ~~its potential threat to human health~~affected tributaries. Implement comprehensive monitoring and research program to determine loadings and sources of total and methyl mercury, transport of mercury in sediment, factors affecting mercury transformation and bioaccumulation in the estuary, and concentrations of mercury in indicator species. Use this information to prioritize remediation or cleanup of mercury sources.

- ~~**Salinity Selenium** -~~ Reduce ~~salinity~~selenium impacts through reduction of ~~leaching of agricultural land via irrigation improvement~~loads at their sources, ~~crop selection~~increased flow, and ~~changes in land use~~assimilation of discharges with flow. ~~**Turbidity and Sedimentation - Reduce turbidity and sedimentation which affect several hydraulic areas in the Bay-Delta and its tributaries, including treatment of drinking water sources.**~~

Further research is needed for some water quality problems.

~~For example, for some parameters of concern, such as mercury, not enough is understood about its sources, the bioavailability of mercury to various species, factors contributing to its bioavailability, and the load reductions needed to reduce fish tissue concentrations necessary for human consumption.~~ For example, as to mercury, not enough is understood about the relative contribution of various mercury sources; factors affecting the transformation of mercury from one form into another (particularly the formation of methyl mercury, the most bioavailable form); specific control measures that will reduce the levels of bioavailable mercury within the estuary; and, ultimately, the level of load reductions needed to reduce fish tissue concentrations to levels that will render the fish safe for human consumption. In addition, research is needed to determine what effect wetlands restoration activities will have on the bioavailability of mercury in soils in these restoration areas.

~~**Selenium** - Reduce selenium, through irrigation control, crop selection, and possibly land~~

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Water Quality Targets

For many water quality parameters, numerical and/or narrative objectives for the protection of ecological and other beneficial uses already exist in water quality control plans adopted by the State and Regional Water Quality Control Boards. The CALFED Water Quality Program has adopted regulatory objectives where appropriate as its targets for water quality improvement, such as for selenium and mercury. For some water quality parameters, objectives do not presently exist. This is particularly true for drinking water that receives further treatment prior to use (see page __). As the Water Quality Program evolves, it is anticipated that periodic re-evaluation of water quality targets will be one feature of adaptive management as applied to this program. ↳ Are we suggesting continually changing the targets?? upward??

With respect to drinking water beneficial uses, the CALFED objective is to continuously improve source water quality that allows for municipal water suppliers to deliver safe, reliable, and affordable drinking water that reliably meets, and where feasible, exceeds applicable drinking water standards. CALFED program actions will be aimed at reducing the levels of bromide, organic carbon, and pathogens in Delta drinking water sources. CALFED's target for providing safe, reliable, and affordable drinking water in a cost effective way is to achieve either: a) average concentrations at Clifton Court Forebay and other south and central Delta drinking water intakes of 50 ug/L bromide and 3.0 mg/L total organic carbon; or b) an equivalent level of public health protection utilizing a cost effective combination of alternative source waters, source control, and treatment technologies.

Continuous improvement of Central and South Delta water quality from current average conditions will be a Stage 1 objective as part of the first bundle of Stage 1 projects.

Enabling Delta water users to substitute higher quality source water for Delta water offers important opportunities to provide safe drinking water, and will be intensively investigated as a Stage 1 approach within the CALFED Program. However the importance of developing adequate source water quality in the Delta cannot be ignored.

In seeking to meet its commitment to provide urban agencies with water sufficient in quality to produce safe and affordable drinking water that meets and, where feasible, exceeds standards for public health protection, CALFED will consider additional water management options including, but not limited to, provision of alternate sources, use of storage facilities to improve drinking water quality, and an isolated facility to provide source water of better quality. The degree of improvement needed, if any, will be determined based on developments in treatment technologies, future regulatory directions and results of new health effects studies. CALFED plans an active role in fostering development of the information that will make such determinations possible.

Drinking water supplies from the Delta contain higher bromide concentrations than are found in

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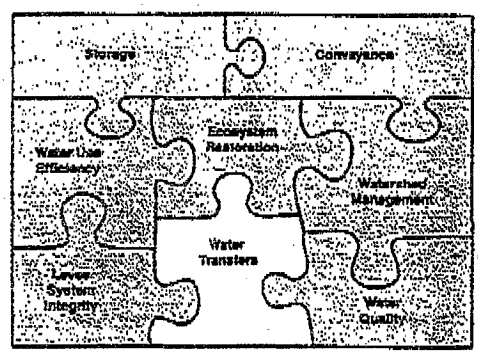
Re: entire section:
This will complicate and hinder transfers from taking place.
Adds hurdles.

Water Transfer Program



Water transfers are currently an important part of water management in California and offer the potential to play an even more significant role in the future. Transfers can provide an effective means of moving water between users on a voluntary and compensated basis, as well as a means of providing incentives for water users to implement management practices which will improve the effectiveness of local water management.

Every year, hundreds of thousands of acre-feet of water are transferred between willing parties. Most of these transfers consist of in-basin exchanges or sales of water among Central Valley Project (CVP) or State Water Project (SWP) contractors. For example, in 1997 nearly 288,000 acre-feet of CVP water was transferred by CVP contractors south of the Delta. ~~Of this amount, approximately 76,000 acre-feet was transferred to meet the San Joaquin Valley Level IV refuge water needs, as required by CVPIA.~~ Since 1993, over 1.4 million acre-feet of CVP water has been transferred north and south of the Delta by contractors within the various divisions of the CVP. In addition, approximately 230,000 acre-feet of non-CVP water has been purchased and transferred by the Interior Water Acquisition Program to meet established instream flow purposes.

Generally, past transfers have been successful, and CALFED actions must not interfere with the historical ability to transfer water. ~~but they~~Some transfers have raised concerns regarding adverse impacts to other water users, to rural community economies and to the environment. They have also highlighted contradictory interpretations of state law, the lack of reliable ways to transport the transferred water across the Delta, and complicated approval processes. Before the value of water transfers as a management tool can be fully realized, these problems need to be addressed.

The Water Transfer Program proposes a framework of actions, policies, and processes that, collectively, will facilitate water transfers and further development of a statewide water transfer market by addressing these problems. Because water transfers can impact third parties (those not directly involved in the transaction) and/or local groundwater, environmental, or other resource conditions, the framework also includes mechanisms to provide protection from such impacts.

Both the BDAC Water Transfer Work Group and the Transfer Agency Group were instrumental in identifying the issues which constrain the water transfer market. These were sorted into three broad categories to aid in developing resolution:

1. *Environmental, socio-economic, and water resource protections* - including:
   - Third party socio-economic impacts

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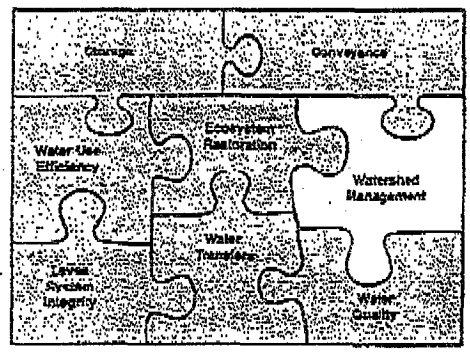
More information on the water transfer program will be included in the revised *Water Transfer Program Plan*.

language needs to reflect that landowner control/ support is essential to program success.

Watershed Program



The two main components of the Watershed Program are to provide assistance - both financial and technical - to local watershed programs, and to aide in the coordination and integration of local watershed programs with the CALFED Program. The Watershed Program supports and encourages locally-led watershed activities that benefit the Bay-Delta system. ~~Realizing that watershed approaches may vary, a set of guiding principles has been established. These guiding principles illustrate a "bottom-up" approach rather than "top-down." Emphasis is placed on the importance of community involvement and support. In addition,~~ Emphasis is placed on a "bottom up" approach rather than "top down," recognizing that local watershed approaches may vary and that community involvement and support are essential. The Watershed Program strives to strengthen the partnerships and relationships between the public, local watershed organizations, and governments at all levels. Like the CALFED Bay-Delta Program itself, watershed activities included in the Watershed Program should ensure that adaptive management processes can be applied at multiple scales and across ownerships.

In summary, the draft Watershed Program includes the following elements:

WATERSHED PROGRAM GOAL

To help coordinate and integrate existing and future local watershed programs and to provide technical assistance and funding for watershed activities and protection relevant to achieving the goals and objectives of the CALFED Bay-Delta Program.

- **Support Local Watershed Activities** - Implement watershed restoration, maintenance, and conservation activities that support the goals and objectives of CALFED.

- **Coordination and Assistance** - Facilitate and improve coordination and assistance between government agencies, other organizations, and local watershed groups.

- **Watershed Monitoring Assessment** - Facilitate monitoring efforts that are

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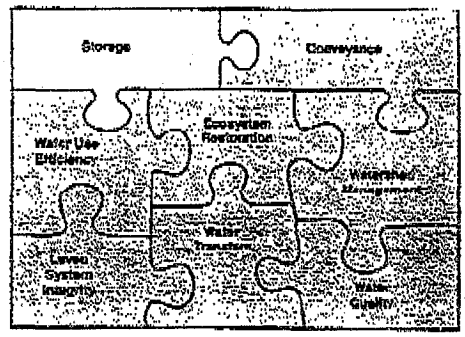
Storage



Storage of water in surface reservoirs or groundwater basins can provide opportunities to improve the timing and availability of water for all uses. The benefits and impacts of surface and groundwater storage vary depending on the location, size, operational policies, and linkage to other Program elements. By storing during times of high flow and low environmental impact, more water is available for release for environmental and consumptive purposes during dry periods when conflicts over water supplies are critical. Properly managed, storage turns low value water into high value water for all uses. Groundwater storage will only be successful if the rights of overlying landowners are protected and they are locally controlled. Both groundwater and surface storage provide additional flexibility for managing water supplies, but there are differences in the potential operation of these two approaches to storage. Groundwater storage is generally viewed as having more benign on-site impacts to both environmental and other existing uses of the land. Depending on its operation, groundwater storage can also have significant water quality benefits. Finally, groundwater storage is generally less expensive than new surface storage facilities. On the other hand, surface storage can have flood control, power generation and regulation, and recreational benefits not generally available with groundwater storage. More importantly, surface storage is more suited to rapidly discharging or receiving large volumes of water, a distinct advantage in real-time management of high river flow periods or environmental storage releases.

Considering the magnitude of conflicts over available water in California, CALFED believes that it must aggressively evaluate and implement all available water management options to ensure water supply reliability. Therefore, aggressive implementation of water conservation, recycling, and a protective water transfer market are critically important for effective water management. New surface and groundwater storage will be constructed as necessary, considering appropriate implementation of nonstructural programs and demonstrated willingness to pay by potential beneficiaries, to meet CALFED's program goals. During Stage 1, CALFED will evaluate and determine the appropriate mix of these water management tools.

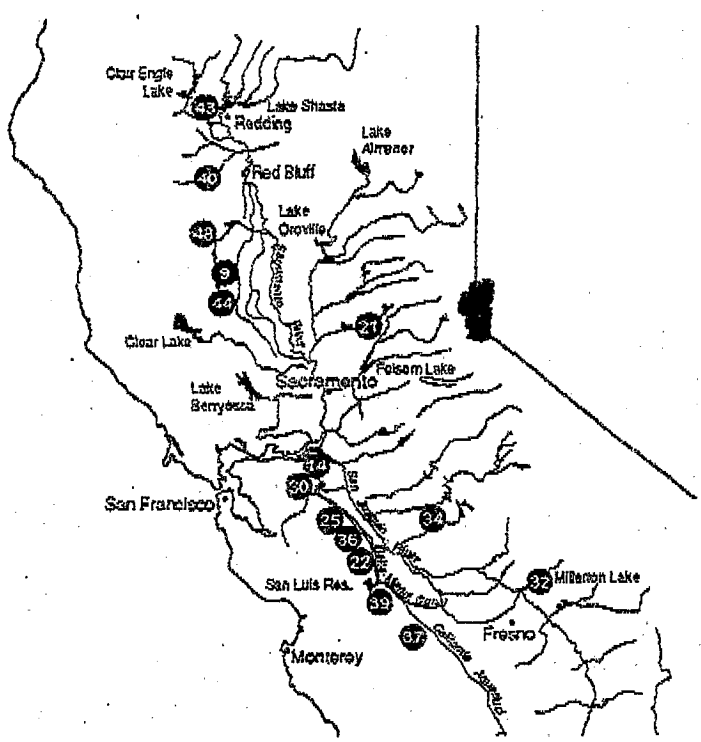
Based on a programmatic evaluation of potential water supply benefits and practical consideration of acceptable levels of impacts and total costs, the range of total new storage considered for evaluation in Phase II was from zero up to about 6 MAF. This amount of new storage was considered a reasonable range for study purposes and impact analysis; more detailed study and significant interaction with stakeholders will be required before specific locations and sizes of new storage are proposed. However, most water supply benefits of Sacramento River off-stream storage are achieved with about 3 MAF of storage, while most water supply benefits of south of Delta off-aqueduct storage are attained with about 2 MAF of storage.

Other types of surface storage considered in Phase II include San Joaquin River tributary storage and in-Delta storage. Relatively smaller volumes of storage are practical for these types of storage facilities due to engineering considerations. Groundwater banking and conjunctive use in the Sacramento and San Joaquin Valleys were also considered in Phase II. The practical storage capacity available for groundwater storage in these areas will be determined only after detailed study of specific projects and full consideration of local concerns. For study purposes, groundwater storage volumes of 250 TAF in the Sacramento Valley and 500 TAF in the San Joaquin Valley were considered. Although significant additional work needs to be completed to identify groundwater storage opportunities, possible sites include Stockton East, an expanded Kern Water Bank, and the Madera Ranch project. In addition, there may be significant opportunities for enhanced surface and groundwater storage within service areas dependent on Delta water for some or all of their supplies.

Appreciate "consideration" but suggest "fully address and mitigate local concerns."

CALFED will focus on off-stream reservoir sites for new surface storage, but will consider expansion of existing on-stream reservoirs. CALFED will not pursue storage at new on-stream reservoir sites. Under the ecosystem restoration program element, some dams and stream obstructions will be removed to open additional areas of fishery habitat. Even with new dams for surface storage, there will be fewer stream miles blocked in California with implementation of the CALFED Bay-Delta Program.

For the purposes of the programmatic Phase II evaluation, an inventory of fifty-two potential new surface storage projects was compiled. Those projects that appeared most feasible (see adjacent figure) were evaluated to provide representative information on costs and benefits. A more complete screening process for surface storage opportunities, taking into account engineering feasibility, potential environmental impacts, costs, and benefits, will proceed over the coming months and will be documented in a future report. While screening remains to be completed, ~~among possible locations for additional surface storage are Sites Reservoir, a modestly enlarged Shasta Reservoir, and in-Delta storage~~CALFED has narrowed the number of potential sites for additional CALFED consideration to the fifteen in the following table. These include potential sites to provide benefits for water supply, flood control, water quality, ecosystem, and other multiple purposes.



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constraints would be necessary to determine an optimal volume of storage from a water supply perspective.

A fundamental principle of the CALFED Program is that the costs of a program should be borne by those who benefit from the program. That principle is especially relevant in the decision about new storage facilities. In principle, public money will be used to finance storage projects only to the extent that the storage creates public benefits; user money should be used to finance the portion of storage that generates user benefits. This "user pays" principle is critical to the overall CALFED goal of increasing the efficiency of water use in California. CALFED is performing economic analyses evaluating new facilities and other approaches (such as conservation, recycling, and transfers) to identify cost-effective pathways to meeting CALFED objectives. These economic analyses will be especially useful in assisting all potential users of new storage to evaluate the relative costs and benefits of particular storage options, as well as other ways of addressing reliability.

The following linkages and conditions will guide development of groundwater/conjunctive use and new surface water storage. Agency and stakeholder input is needed to make the linkages and conditions for new storage more specific, and to develop appropriate "bundels" of actions so that all CALFED goals progress together.

Groundwater/conjunctive use programs. Groundwater/conjunctive use programs will be constructed as necessary to meet CALFED's goals provided:

A) locally controlled.

a. Groundwater monitoring, and modeling programs are established
b. Complete all environmental documentation and permitting requirements
c. Demonstrated commitment to finance by beneficiaries
d. Full recognition is given to the rights of landowners
e. Guidelines are in place to protect resources, address local concerns, and avoid potential impacts prior to and during ~~implementing~~implementation of a conjunctive management operation. The draft guidelines developed to date ~~include~~address the following:
   - Funding support ~~will be provided~~ for local assessment of groundwater resources.
   - Conjunctive management programs will be voluntary.
   - The needs of landowners and users of local groundwater are protected.
   - Conjunctive management projects will be overseen by local agencies in partnership with other entities to assure that concerns are addressed through interest-based negotiation.
   - Groundwater withdrawals must be managed to avoid land subsidence ~~and~~, aquifer degradation, and ecosystem degradation.
   - Consistency with local groundwater plans (such as AB3030 Plans) and City and/or County Comprehensive General Plans

particularly under dry year scenarios.

delete

Surface Storage. New or expanded surface storage will be constructed ~~as necessary~~ to meet CALFED's goals in conjunction with the following actions (all actions will be bundled so they move forward together):

a. A [redacted] level of water use efficiency is achieved throughout the solution area.
b. Demonstrated progress on the water transfer framework
c. Demonstrated commitment to finance by beneficiaries
d. Complete all environmental documentation and permitting requirements including completion of site specific Clean Water Act Section 404 compliance

CALFED seeks to plan for recreation enhancement and, if necessary, to mitigate impacts to Delta recreation resulting from CALFED activities designed to restore other Delta resources. Construction of new facilities will provide for appropriate on-site recreation development. The responsibilities and procedures for recreation development at new storage and other facilities is clearly addressed in current law. Federal and state laws and local laws and plans govern recreation developments associated with water development projects in and near the Delta. The Draft Programmatic EIS/EIR and accompanying technical reports address general impacts that CALFED Program implementation could have on recreational resources and on how the recreational resources could impact the other parts of the Program. The time line of such a process should be consistent with the Phase III documentation and implementation schedule, ensuring that recreation resources are appropriately considered as part of the Bay-Delta solution.

The CALFED Program has no specific objectives for hydropower generation. However, CALFED does seek to minimize negative impacts on resources, such as hydropower generation, during and after implementation. The Program may result in temporary or long-term changes in river and reservoir operations, which may affect the quantity, timing and value of hydropower produced within the Bay-Delta system. Also, additional pumping may increase the amount of Project Energy Use (power consumed by the CVP and the SWP to move water through the system). An increase in Project Energy Use can reduce the amount of surplus hydropower that might otherwise be available for sale from the CVP (necessary to repay Project debt), and may increase the amount of power that must be purchased from outside sources to meet SWP Project Energy Use. Replacement for reduced availability of renewable hydropower would likely come from fossil fuel or other thermal generation. CALFED is coordinating with the Western Area Power Administration to assure that issues are identified and properly framed, so consequences and options are clear to stakeholders, the public, and the CALFED decision-makers.

— Is Calfed showing a preference for fossil fuel over hydro ??